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without serious fear that they cannot be overcome. It is likely enough, for example, that the block of glass five feet in diameter and eight inches thick which forms the mirror of this telescope must be maintained throughout the day at the mean temperature of the night in case its full possibilities are to be realized in practice. But this is a simple matter, requiring only the application of processes commonly employed in commerce. As for the mechanical questions involved in the production of a mounting capable of carrying this mirror with precision, there seems to be no reason to doubt that they can be solved.

I trust it has been shown that the Carnegie Institution, in establishing a Solar Observatory on Mt. Wilson, is entering a new and promising field of research, in which equipment and conditions not now available are indispensable. I am not qualified to express an opinion whether the work to be undertaken is more or less important than possible researches in other departments of science.

Mt. WILSON, March, 1905.

PLANETARY PHENOMENA FOR MAY AND JUNE, 1905.

BY MALCOLM MCNEILL.

PHASES OF THE MOON, PACIFIC TIME.

New Moon, May 4, 7 ^h 50 ^m A.M.	New Moon, June 2, 9 ^h 57 ^m P.M.
First Quarter, " 11, 10 46 P.M.	First Quarter, " 10, 5 5 A.M.
Full Moon, " 18, 1 36 P.M.	Full Moon, " 16, 9 51 P.M.
Last Quarter, " 25, 6 50 P.M.	Last Quarter, " 24, 11 46 A.M.

The Sun reaches the summer solstice and begins his southward motion at about 7 P.M. June 21st, Pacific time.

Mercury will not be in very good position for observation during May and June. It passed inferior conjunction and became a morning star on April 23d. It continues to be a morning star until June 24th, when it passes superior conjunction and becomes an evening star. It attains its maximum western distance from the Sun ($25^{\circ} 26'$) on the morning of May 21st, at a time when it is near aphelion in its orbit; so

the distance is considerably greater than the average greatest elongation. However, it is then so far south of the Sun that its altitude above the horizon at sunrise and its consequent duration of visibility are small. It will at no time during the present period rise as much as an hour before sunrise, and hence can not be easily seen.

Venus passed inferior conjunction on April 27th and became a morning star, and by the end of June will have nearly reached its greatest west elongation. Until May 14th it moves westward among the stars, thus increasing its apparent distance from the Sun quite rapidly. It then begins to move eastward, but lags behind the Sun in their common motion, and follows a path pursued by the Sun some weeks or months before. It is therefore always south of the Sun during this period, and does not rise as long before sunrise as it does when it reaches a similar westward distance from the Sun at another time of the year. On May 1st it rises less than forty minutes before sunrise, and at the end of June about two and one half hours before. It is however very bright, and attains maximum brilliancy on June 2d. For several weeks about this time it will be visible to the naked eye in full daylight.

Mars comes to opposition with the Sun on May 8th. It is then above the horizon throughout the night, and it will not set until long after midnight during the two-month period. At the end of June it sets at about 1 A.M. It is in the constellation *Libra*, and during the two months moves westward (retrogrades) about 12° until June 17th; then it resumes its eastward motion, reaching a position at the end of the month nearly the same as that occupied at the beginning, but a little farther south. When it begins to move eastward (on June 17th) it is about 3° south of the position it held on January 28th, and on August 14th it will reach the position it held on April 2d, the date when it began its retrograde movement, but about 7° south. The whole motion from January 28th to August 14th is in the shape of a gigantic S about 18° in breadth and 10° in height.

At the time of opposition the planet's distance from the Earth is about fifty millions of miles. This is the least opposition distance since the opposition of October 20, 1894, when

the distance was forty millions. The next opposition will occur about July 1, 1907, and the distance will then be considerably less than it is at the present one, and the distance at the next following one will be still less. The opposition distance of Earth and *Mars* is least for an opposition coming near the end of August, because the Earth is at that time between the Sun and the perihelion of *Mars*' orbit. The average time from opposition to opposition is seven hundred and eighty days, but it may be twenty days or more greater or less than this, according to the time of year when opposition takes place, successive oppositions coming during late summer or early autumn being more than eight hundred days apart, while those in late winter or early spring are about seven hundred and sixty days apart.

Jupiter passes conjunction with the Sun on the night of May 3-4th and becomes a morning star. On June 1st it rises about an hour before sunrise, and will be an easy object on account of its brilliancy. On the morning of June 2d it is in conjunction with *Mercury*, the latter planet then being about 2° south of the former, and not easy to see on account of its faintness and low altitude before sunrise. By the end of June *Jupiter* rises about 2 A.M.

Saturn rises at about 2:30 A.M. on May 1st, and at about 10:30 on June 30th. It is in *Aquarius*, and moves slowly eastward until June 14th, and then begins to move westward.

Uranus rises a little after 11 P.M. on May 1st, and comes to opposition with the Sun, rising at sunset, on June 24th. It is still in *Sagittarius*, and moves westward about $2\frac{1}{2}^{\circ}$ during the two months.

Neptune is in the western sky in the evening. It is in the constellation *Gemini*, and comes to conjunction with the Sun on June 30th.

(FORTY-EIGHTH) AWARD OF THE DONOHUE
COMET-MEDAL.

The Comet-Medal of the Astronomical Society of the Pacific has been awarded to MICHEL GIACOBINI, astronomer, Nice, France, for his discovery of an unexpected comet on December 17, 1904.

Committee on the Comet-Medal:

W. W. CAMPBELL,
WM. H. CROCKER,
CHAS. BURCKHALTER.

(FORTY-NINTH) AWARD OF THE DONOHUE
COMET-MEDAL.

The Comet-Medal of the Astronomical Society of the Pacific has been awarded to A. BORRELLY, astronomer, Marseilles, France, for his discovery of an unexpected comet on December 28, 1904.

Committee on the Comet-Medal:

W. W. CAMPBELL,
WM. H. CROCKER,
CHAS. BURCKHALTER.